Increasing Home Blood Pressure Monitoring.

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Problem Statement

Uncontrolled blood pressure (BP) increases the risk of cardiovascular disease and mortality.

Home Blood Pressure Monitoring (HBPM) is an effective strategy for controlling BP; however, across the United States, only 38.7% of patients with high BP engaged in HBPM in 2018 (Jackson et al., 2019; Ostchega et al., 2018).

In primary care settings, the lack of measures that support HBPM is a critical barrier to performing HBPM (Liyanage-Don et al., 2019). This project was implemented at an urban primary care clinic; approximately 240 patients, 90%, have high BP, 108 patients, 40%, have uncontrolled BP, and only 10% perform HBPM. Patients are encouraged to practice HBPM to control BP, but the clinic does not implement measures to support HBPM.

Purpose and Project goals.

Purpose: To assist patients with high BP to achieve BP control by improving HBPM performance.

Process goals.

- 100% of all patients without a HBPM device will receive a physician's prescription for a HBPM device and a list of recommended devices and costs.
- 100% of all patients with eligible insurance will have their prescription sent to the local pharmacy to purchase a new device.
- 100% of all patients with new or old HBPM devices will receive callbacks to remind them to bring their devices to the clinic for validation.

Outcome goals: To increase the number of patients that own a home BP device and the number of validated devices.

Methods

Setting: Urban primary care clinic.
Population: Patients with a diagnosis of high BP.
Intervention: An HBPM performance incentive policy was implemented over 14 weeks. The policy required patients without a HBPM device to receive a physician's prescription and a list of recommended devices and costs. In addition, prescriptions of patients with eligible insurance at a local pharmacy were sent to the pharmacy to purchase a new HBPM device. Finally, callbacks were made to remind patients to bring their HBPM devices to the clinic for validation, either new or currently used.
Data collected and shared with local pharmacy: Patient's name, DOB, address, phone number, height, weight, and insurance. The data was collected during patients' clinic visits and stored in RedCap.
HBPM performance- was measured by the percentage of the number of devices purchased over the total number of patients without devices.

Results

Table 1.
Results: Process and outcome goals.

Total participants: 18 out of 22. 3 patients declined to participate.
Patients with current/used HBPM devices: 7
Patients without HBPM devices: 11
Patients with eligible insurance at the local pharmacy: 4
Patients with new HBPM devices after intervention: 3
Number of devices used & new validated: 5

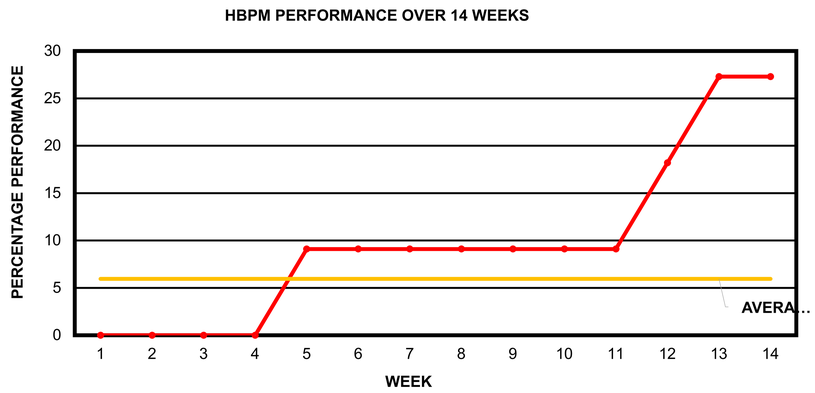
Process goals

- 100% (n=11) patients without a HBPM device received a physician's prescription for a HBPM device and a list of recommended devices and costs.
- 100% (n=4) patients with eligible insurance, had their prescription sent to the local pharmacy to purchase a new device.
- 100% (n=10) patients with new and current/used HBPM devices received callbacks to bring their devices to the clinic for validation.

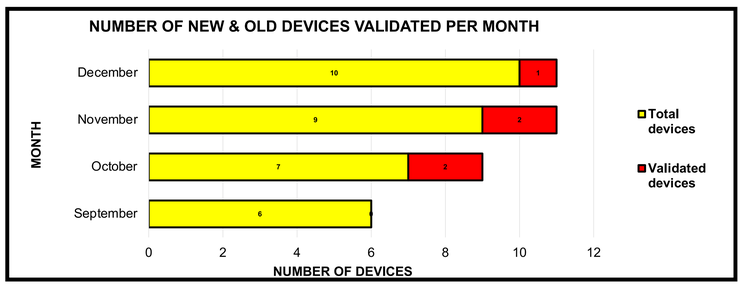
Outcome goals

- Number of new HBPM devices: 3
- New HBPM performance: 27.3%
- Number of devices validated: 5

Note: All process goals (100%) were met. Outcome goals: 3 new devices were acquired and 5 out of 10 new & used devices were validated. HBPM performance was calculated by 3/11x 100% (# of new devices / # of patients without devices) X 100%).



Note: The figure illustrates the HBPM performance over a 14-week period. A new home BP device was purchased at weeks 5, 12, and 13. During the flat trends, no new devices were purchased.



Note: The graph depicts the total and number of validated devices over a 14-week period (Sept-Dec). In September, 0 out of 6 devices were validated, 2 out of 7 devices were validated in October, 2 out of 9 devices were validated in November, and 1 out of 10 devices were validated in December.

Discussion

Purpose achievement: The baseline HBPM performance improved from 10% to 27.3%, and five home blood pressure monitors were validated. In addition, there was a direct relationship between the HBPM performance incentive policy and improved HBPM performance; all three new devices were purchased from the local pharmacy.

Barriers

- Small private clinic with limited staff, limiting patient participation.
- A few appointments were canceled by patients, limiting patient participation and the number of devices validated.
- Majority of patients have Medicare, which is not accepted at the local pharmacy to purchase devices.
- Long gaps between patient visits hampered device validation.
- The local pharmacy takes 2 to 4 weeks to deliver devices, negatively impacting HBPM performance.

Conclusion

Usefulness: This QI project emphasizes that HBPM-friendly policies encourage patients to monitor their blood pressure. This finding is consistent with previous research claiming that HBPM programs and policies promote HBPM performance in hypertensive patients. When patients monitor their blood pressure over time, they are more likely to have controlled blood pressure, lowering their risk of cardiovascular disease. Monitoring blood pressure also makes it easier for practitioners to titrate blood pressure medications properly.
Spread: The findings are not generalizable because of the small sample size and setting.
Sustainability:

- Home BP devices should be recorded in the EHR.
- Patients should enter home BPs in the portal for better monitoring.
- I would suggest that the staff help monitor performance since it is the responsibility of the provider to monitor and assess their patients' BP.

Practice Implications: High blood pressure is a chronic illness that can lead to severe complications if not properly managed. Patients with high blood pressure require constant encouragement from HBPM-supportive incentives to manage their blood pressure over long periods

References

Jackson, S. L., Ayala, C., Tong, X., & Wall, H. K. (2019). Clinical Implementation of Self-Measured Blood Pressure Monitoring, 2015-2016. *American journal of preventive medicine*, *56*(1), e13–e21. https://doi.org/10.1016/j.amepre.2018.06.017
Liyanage-Don, N., Fung, D., Phillips, E., & Kronish, I. M. (2019). Implementing Home Blood Pressure Monitoring into Clinical Practice. *Current hypertension reports*, *21*(2), 14. https://doi.org/10.1007/s11906-019-0916-0
Ostchega Y, Hughes JP, Zhang G, Nwankwo T, Chiappa MM. (2018). Mean midarm circumference and blood pressure cuff sizes for U.S. adults: National Health and Nutrition Examination Survey, 1999-2010. Blood Press Monit.2013;18:138–143. doi: 10.1097/MBP.0b013e3283617606

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